

E7.4-10763

TMX-170355

EREP QUARTERLY PROGRESS REPORT

1 MAY to 31 JULY 1974

PLANNING APPLICATIONS IN EAST CENTRAL FLORIDA

(E74-10763) PLANNING APPLICATIONS IN EAST CENTRAL FLORIDA Quarterly Progress Report, 1 May - 31 Jul. 1974 (NASA) 12 p HC \$4.00	CSCL 08B	N74-33830 Unclas 00763
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EXPERIMENT PROPOSAL NO. 385

CONTRACT NO. CC-30281A

BREVARD COUNTY PLANNING DEPARTMENT

2575 N. COURTENAY PARKWAY

MERRITT ISLAND, FLORIDA

32952

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EREP PROGRESS REPORT

Covering the period 1 May to 31 July 1974

PLANNING APPLICATIONS IN EAST CENTRAL FLORIDA

Proposal No. 385

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1 August 1974

- * Brevard County Planning Department
- ** Kennedy Space Center
- *** Florida Game and Fresh Water Fish Commission

PERSONNEL

Homer Royals, of the Florida Game and Fresh Water Fish Commission Fisheries Research Laboratory at Eustis has undertaken the water sampling and laboratory analysis portion of the lake eutrophication study and is, therefore, listed as co-investigator for that study.

COUNTY LAND USE MAPPING

A land use map of most of Polk County has been prepared from SL-2 photography. This was done by using a Variscan viewer to enlarge a 9" color ir image by 6X and then tracing the land use patterns on a transparent overlay. The other photographic bands from the S190A camera were then used, in turn, to provide additional information; the ir bands, for example, were used to delineate water surfaces. Since the Variscan viewer has only fixed enlargement steps and the S190B photography has a different scale than the S190A, it could not be projected on the tracing; but it could still be used separately for observing features which could then be drawn on the tracing. This was done in some instances for urban areas. The result, a generalized land-use map of most of Polk County (that portion not covered by clouds), is shown in Figure 1, the legend for which is given in Table 1. The agricultural area is almost entirely citrus groves. Two shades of the agricultural pattern can be seen; no distinction is intended. This map clearly shows the dominant land uses of this county to be citrus groves, phosphate mining, and wetlands.

For comparison, corresponding classes taken from a land use map used by the Polk County Planning Department are shown in Figure 2. Their map does not have wetlands and phosphate mining areas classified as such, so those classes cannot be compared. The conventional map shows agricultural use to greater detail, but the general patterns of agricultural use in the two maps are in agreement.

Significant differences will be noted in the urban representation on the two maps. That is because urban representation has a different meaning on the two maps: on the conventional map, it represents the

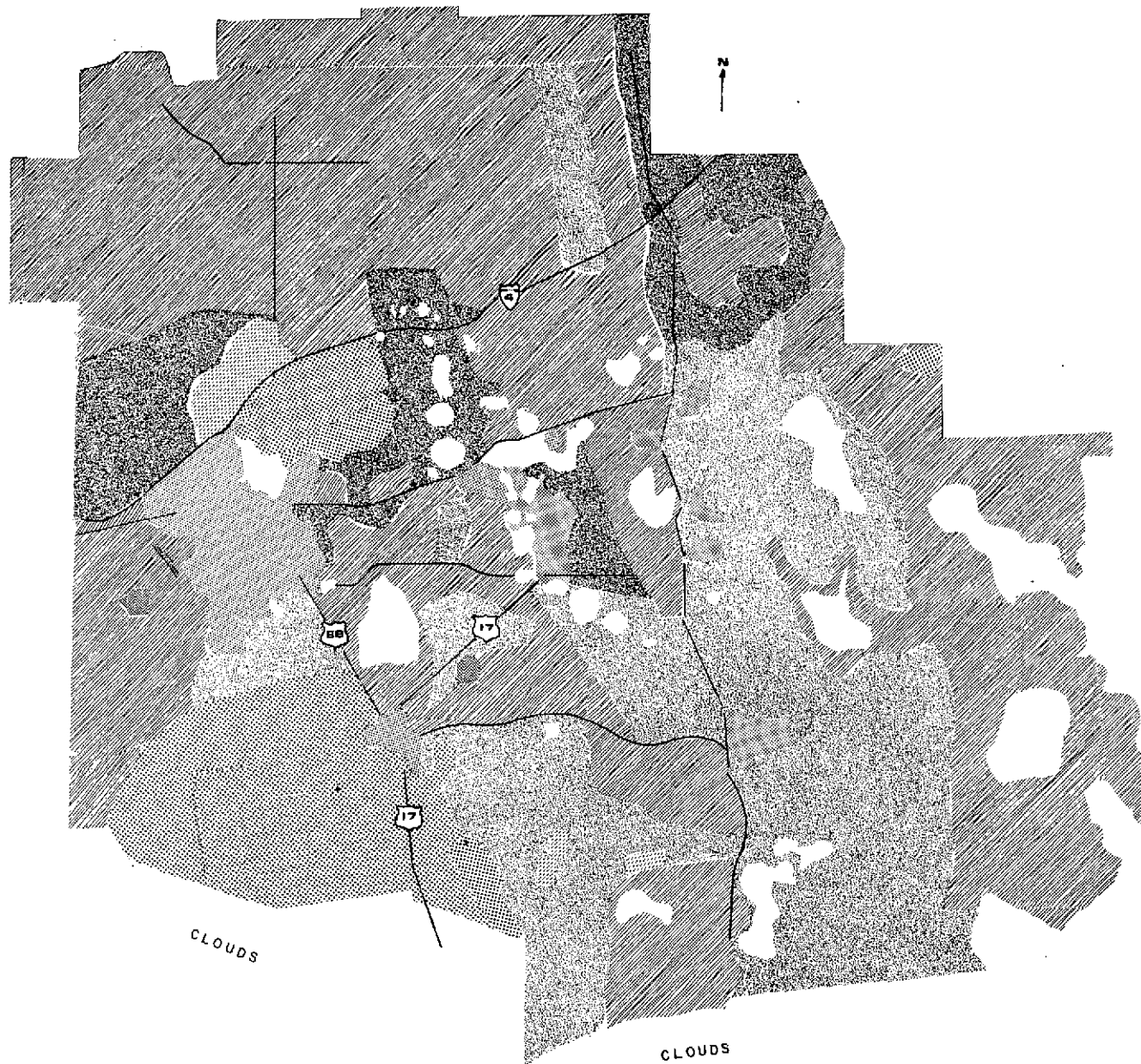


Figure 1
-2-

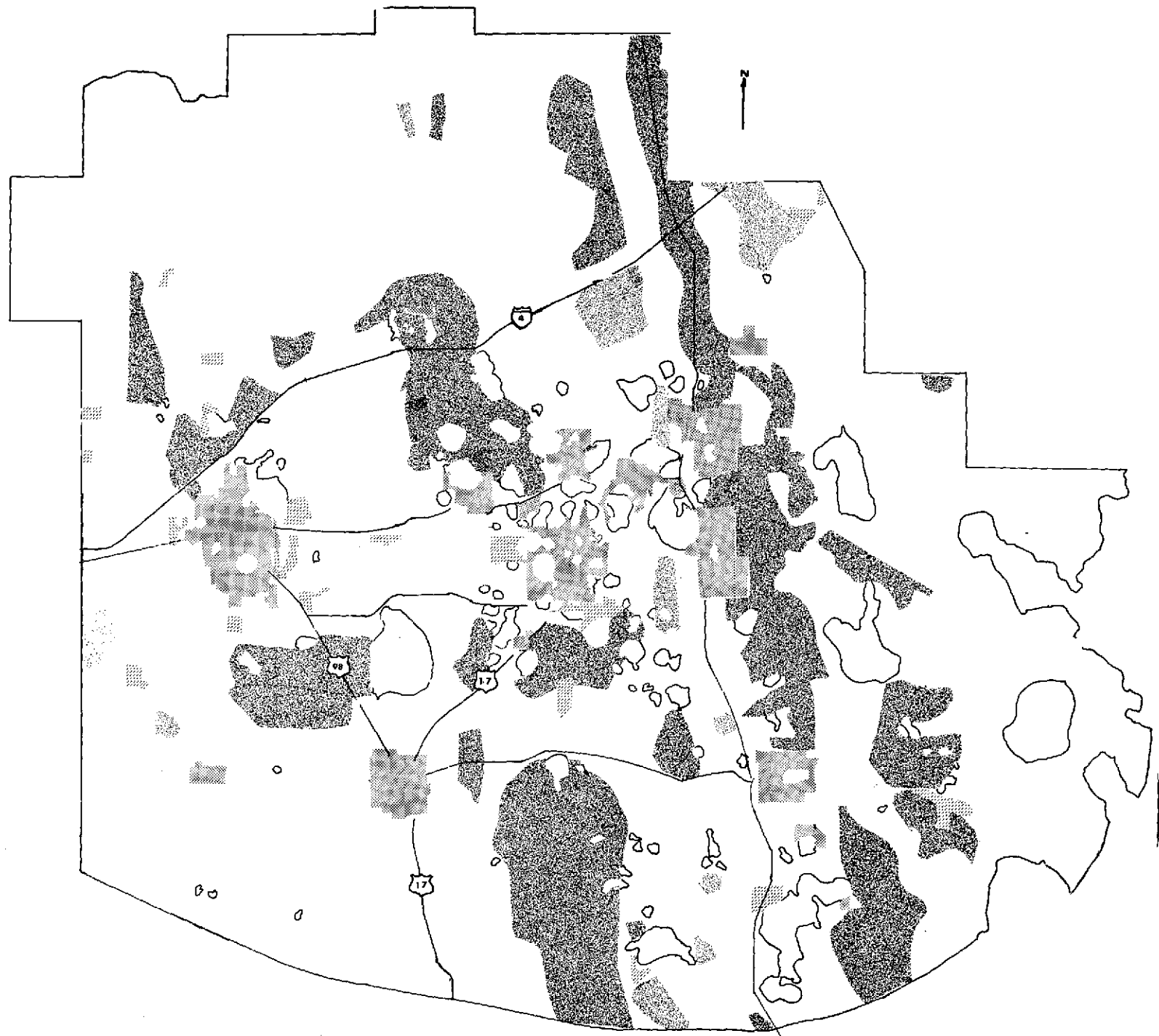





Figure 2
-3-

TABLE 1

LAND-USE CATEGORIES:

Level 101. Urban and built-up land 02. Agricultural land ---- 

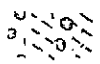
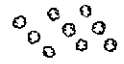








03. Rangeland

04. Forest Land ----- 


05. Water

06. Nonforested Wetland



07. Barren Land

Mixed CategoriesOpen and Citrus Groves Groves and Lakes Lakes, Groves & Vegetated Wetlands Level 201. Residential ----- a. Rural residential ----- b. Mobile-home parks ----- 02. Commercial and services ----- 03. Industrial ----- 04. Extraction ----- a. Phosphate mines ----- b. Reclaimed phosphate mines ----- 05. Transportation ----- 07. Strip ----- 09. Open ----- 10. Institutional & recreational ----- 

01. Cropland and pasture

a. Muck farms (vegetables) --- 

02. Groves


a. Primarily citrus ----- 01. Grass ----- 

01. Deciduous


02. Evergreen (pine)

03. Mixed


01. Streams and waterways

02. Lakes ----- 

03. Other (Gulf of Mexico)

01. Vegetated ----- 

02. Bare

03. Sand other than beaches ----- 

incorporated regions; on the EREP-derived map, it represents the urban region as actually seen and interpreted. This is an important difference between conventional maps and satellite-derived maps, in general: the conventional map often shows sectors defined by legal boundaries and sometimes includes streets or other features which have been projected for future construction; in contrast, the satellite-derived map, to the extent that it is accurate, shows the situation as it actually exists at the time of observation. Which type of presentation is more useful depends, of course, upon the use which is made of the map. In this instance, all of the developed urban areas except Lakeland are smaller on the EREP map than indicated by their legal boundaries - in some cases much smaller. Lakeland (1970 population: 42,000), the largest city in the county, has outgrown its boundaries, as probably is typical for a city of that size.

Small towns located in the citrus region are difficult to detect, as the spectral characteristics of citrus groves are similar to those of urban areas.

Many of the irregular features and finer detail seen on the original conventional map have been smoothed out to prepare this version.

LAKE EUTROPHICATION

The first set of SL-4 photography has been received, enabling us to make our first preliminary check of water "color" versus sampling data for the central Florida lakes under study. A Digicol viewer was used to measure the light transmissivity in the 0.5 - 0.6 μm band of the 70 mm S190A positive transparencies. We had found from SL-2 photography that a lighter shade in the positive (greater reflectivity of the lake) in this band (which meant a higher transmittance in these measurements) corresponds to a general higher state of eutrophication.

The three parameters measured in the sampled water were chlorophyll a, phaeophytin pigments, and turbidity. The results shown in Figures 3 and 4, do not lead to any conclusions and are presented here as preliminary only. Within a single lake (at least, within Lake Griffin) there is consistency for all three parameters. Between lakes (Eustis and Griffin), there is possible consistency for the phaeophytin pigment concentration but no apparent consistency, for these data, for the other two parameters.

In the plots, the uncertainty in transmittance values indicated corresponds to typical fluctuations in the densitometer readings. The uncertainty in the laboratory measurements is not known at this time; it is believed that the major source of uncertainty in those values is uncertainty in the position at which the sample was taken and spatial variation in water characteristics.

When 9" photography is available, a more accurate positioning of the instrument (densitometer) spot will be possible.

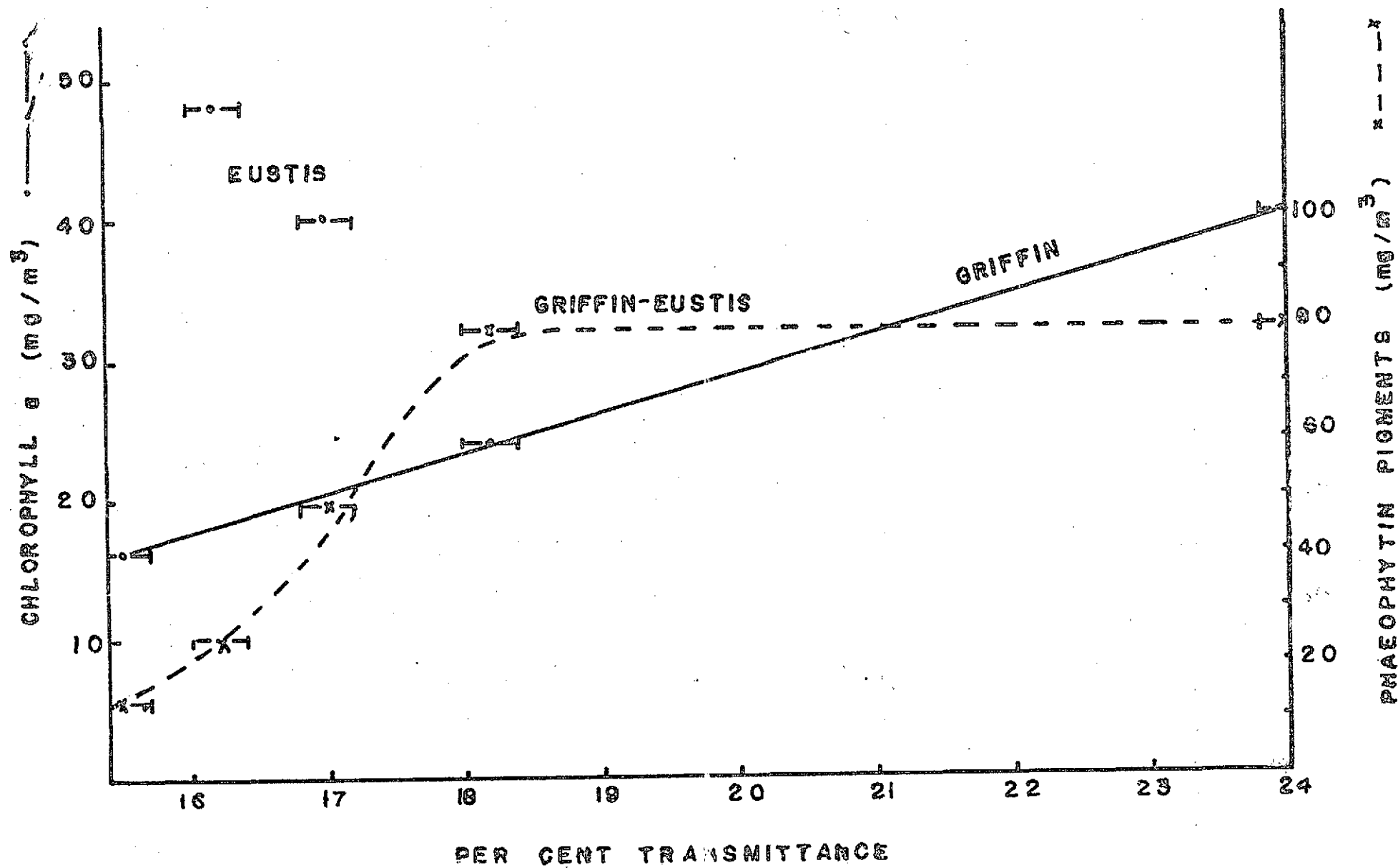


Figure 3
-7-

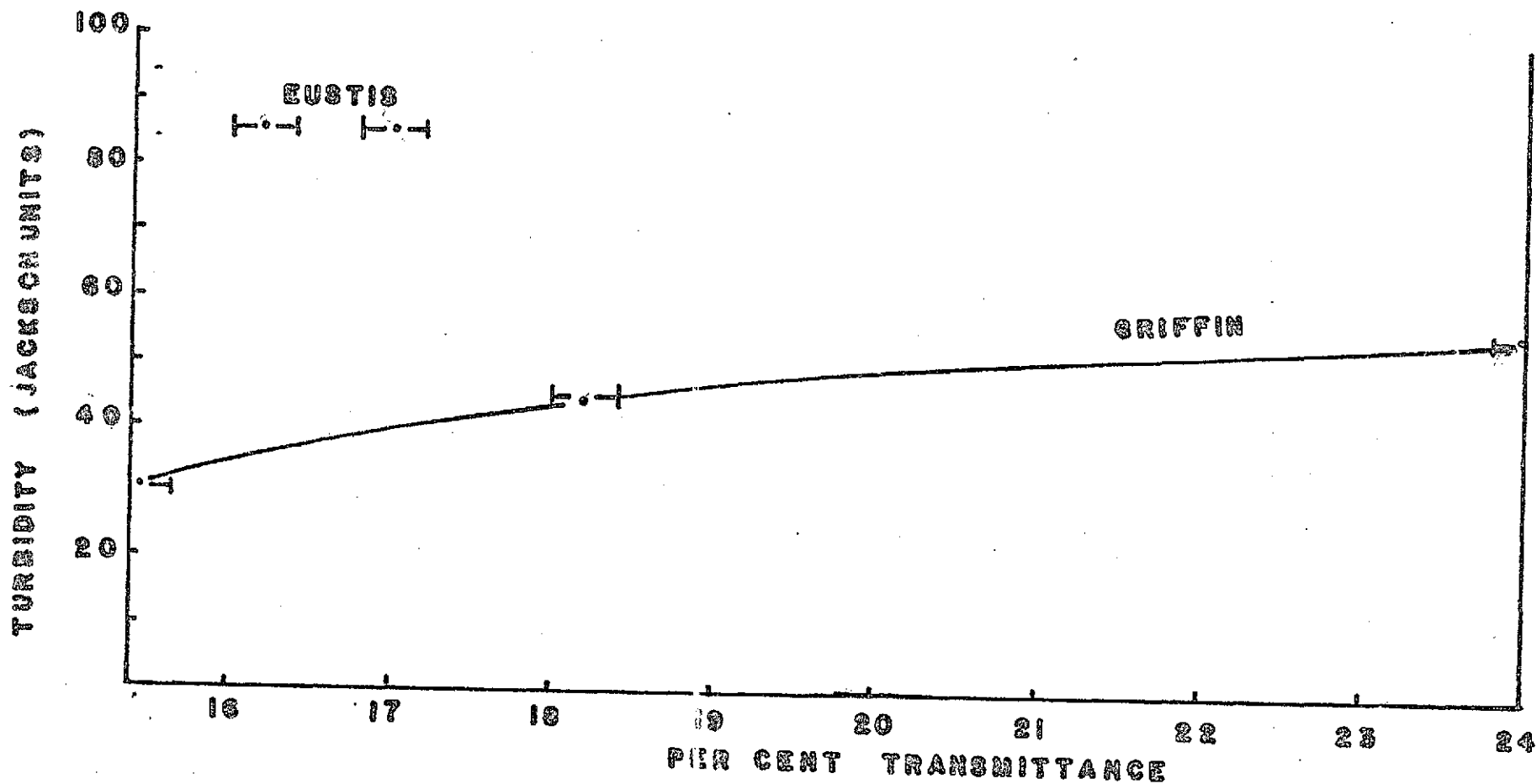


Figure 4

Note that no attempt is made to obtain absolute radiance or reflectance values for the lakes; we are seeking relative values only.

Secchi depths are significantly less than the depths of these lakes, so we think bottom effects are negligible.